

## News and Views

### A View on the Science: Physical Anthropology at the Millennium

EMŐKE J.E. SZATHMÁRY

*AJPA Editorial Office  
Department of Anthropology  
University of Manitoba  
Winnipeg, MB R3T 5V5 Canada*

**EDITOR'S NOTE** The year 2000 marks the onset of the 21st century. Physical anthropologists will provide brief reflections

on our discipline, including what attracted them to it, and their views on the directions our discipline may pursue as we enter, in January 2001, the third millennium. *Am J Phys Anthropol* 111:149–151, 2000.

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“Physical Anthropology is Dead”—that was the name of a symposium given at the annual meeting of the American Association of Physical Anthropologists in 1972, in Lawrence, Kansas. The papers were published in the *Yearbook of Physical Anthropology* when it was produced separately from the *American Journal of Physical Anthropology*, but some university libraries may still have copies. The papers are worth reading, not just for the reason that we consult the writing of futurists: we expect to laugh about predictions that not only did not come true, but were also woefully naive in retrospect. Though the title of the symposium fell flat for me, clearly some thought it worthwhile to take stock of our discipline at that particular time. There were concerns then, not only about prevailing research paradigms, but also of the available funding opportunities and new positions for newly minted academics. And yet I was annoyed by the theme of the symposium, because I did not believe I was embracing a moribund field. I thought my elders were wrong.

Twenty-eight years have passed since those days in Kansas. I gave my first paper at the AAPA meeting that year, and I was brimming with hopes and fears that characterize graduate students on such occasions. My thesis supervisor, a human geneticist, was unable to attend, but the audience included other supportive professors—an osteologist and a paleoanthropologist from home. I was thrilled that my topic—the assessment of gene flow from Europeans into aboriginal North Americans—commanded attention. Only after I returned home did I learn that my curiosity about



Emőke J.E. Szathmáry is past editor of the *Yearbook of Physical Anthropology* and current editor of the *American Journal of Physical Anthropology*. She holds tenured appointments in the Department of Biochemistry and Medical Genetics, and the Department of Anthropology at the University of Manitoba, where she is also President and Vice-Chancellor. Dr. Szathmáry was named Distinguished Lecturer of the American Anthropological Association in 1998.

microevolutionary forces that have shaped the genetic profiles of indigenous North Americans had, even then, touched some sensitive nerves. Some people feared genetics and were suspicious of the intention of its practitioners.

I wish I could say that I had always wanted to be a physical anthropologist. In fact, I began my university days in the Faculty of Medicine at the University of Toronto as a premedical student, and chose history over anthropology as one of my options. I switched into an honours program in Social and Philosophical Studies after my first year, encountered Anthropology and then experienced my one “defining moment.” Only a 19-year old can be certain about explanatory powers of a discipline. My professor had already completed the biological portion of the course, and was telling us about the views of Emile Durkheim, who claimed that human beings have a number of intrinsic needs, but different societies have developed different ways to provide for those needs. Biological and social perspectives came together for me at that moment, because if humans are all members of the same species, they all have the same intrinsic survival needs—which different societies meet differently. This deduction had to mean that cultural differences cannot make one group of human beings intrinsically (i.e., biologically) inferior to another, whatever advantages one culture has attained compared to another! The die was cast: the next year I was registered in the honors Anthropology program. In the 1960s the curriculum required us to take courses in archaeology, linguistics, and sociocultural as well as physical anthropology. I did this, but petitioned the authorities to substitute for elections subjects that would permit me to re-enter medicine. I loved human anatomy, for example, but in my fourth year I encountered my first course in genetics, and quickly signed on for an extra course in human genetics. By year’s end, I knew that I wanted to study human population genetics at the graduate level, and I decided to do it within the framework of Anthropology. Not only did I find explanatory power in this discipline, but in Anthropology, my budding interest in

the genetics of aboriginal people of North America was regarded as legitimate.

Fast forward now, to three decades later. Where do I see my discipline now, and were I young; would I still opt for my field of study? I know now that assumptions—including my own from undergraduate days—must be tested to have validity. And yet I would still pursue research in the genetics of Native North Americans because there is so much that remains unknown in this area. It is painful to hear appeals in this day and age, for example, to urban aboriginal people, to provide blood or bone marrow samples because a desperate family with a dying child is looking for a match. I cringe when such a family is identified as “Dene” (speakers of Athapaskan languages), while the overwhelming majority of aboriginal people in Winnipeg derive from a different language family. This is tantamount to a family of Italian-Americans seeking tissue matches in Finns! There are consequences to being unaware that culture has channelled genetic variation in Native America, and delays incurred by lack of awareness can be lethal. I have always wondered why those who decry Eurocentrism in the literature and history taught in universities are silent about a near ubiquitous European hegemony in human genetics, as if peoples of other continents are of passing consequence only. They seem content to have a map of the human genome derived primarily from samples of people of European ancestry. They accept assurances that once we have the genetic road map, the variations of the map can be filled in. Perhaps. Within the next decade we will have a map to our genome, and then biological anthropologists must act. We, more than practitioners of any other discipline, know that it is impossible to understand the human species and how it came to be without understanding the variability within it. I believe that future generations of young biological anthropologists will find a way to do what must be done, not only by advancing understanding of the genetics of Native North Americans but of indigenous peoples around the world.

The challenge in this kind of research remains what it has ever been: to obtain the informed, willing co-operation of people to

participate in investigations of issues in which they may have no personal interest, or—if they do not refuse—may have such overwhelming personal or political interest that they impose restrictions on what outcome of the research may be disseminated. It is worth knowing that anthropological fieldwork is always interactive. Both researcher and participants have impact on each other. To be successful one has to know the limits of accommodation, which if broached, will compromise the data gathered. Fortunately, the boundary conditions are usually manageable, and thus one lives in the field by the dictum “when in Rome, do as the Romans do.” Visitors must adjust if they and their projects are to pass muster; ethnological knowledge and required social skills are not left back in the office with members of one’s own society when one travels to remote locations to do field work.

I believe that my field experiences have helped shape the way I think about aboriginal North Americans. No matter whom I hear—erudite professor or political activist—or what persuasive piece of scientific literature I read, my thoughts reflect the sieve of field experience: this claim makes sense, that does not. If the field data are insufficient or otherwise compromised, so also will be the deductions based on sophisticated laboratory and statistical analyses. I regard the fruits of field research as forming the contents of the top portion of a funnel. The material in the funnel’s neck is what is tested against refined hypotheses, usually at the bench, arising from the outcome of earlier, broad-based investigations. The need for field studies is directly proportional to the sophisticated bench studies of which geneticists are now capable. As in a biochemical degradation pathway, research must proceed in a step-wise manner, because understanding of a specific genetic mechanism that is thought to operate in a population, requires beginning with a valid sample from that population. As the questions are narrowed, more specific tests may need to be undertaken, always with samples from the same population. And if one wanted to say

something about indigenous North Americans in general, one requires many samples from many populations, the totality comprising a good sample of the groups that persist 500 years after Columbus.

Is it harder today than yesterday to pursue research issues that require the participation of indigenous peoples? Contrary to some, I think it is no harder. Ethical issues always existed, permissions at many levels were always required, researchers who did not pass the personal inspection imposed by potential participants were even then, unsuccessful. The hurdles are different, certainly, but they are known, and therefore one can forge tactics to overcome them.

Will research on the genetics of indigenous peoples be a focus for biological anthropologists in the third millennium? I think that the increasing use of genetic methods in exploring variation at the level of hard tissues will transform Anthropology Departments through the addition of state-of-the-art laboratories and construction of a revised curriculum. In North America laboratories for the study of ancient DNA are no longer novelties in Anthropological settings; advances in non-human primate genetics draw even undergraduate students to the bench. Soon the average undergraduate who specializes in physical anthropology will have good background in genetics, and this expertise will impact on the topics they will pursue at the graduate level. Only a few things can distinguish these young people from those in Biology departments, and these include their awareness of the role of culture in shaping our biocultural species, and their ability to undertake fieldwork in culturally appropriate ways. Thus, I do expect that there will be more research on the genetics of indigenous peoples in the 21st century than there has been in the 20th. The questions that have been with us remain, but the opportunity to answer them has never been more promising, for no one can dispute that understanding the human genome demands understanding of the variation that characterizes the human species.